

**AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions and listings of claims in this application:

1-6. (Canceled).

7. (Currently Amended) A computer-implemented method of automatically generating a mathematical word problem assessment item, the method comprising:

receiving one or more word problem parameters from a user;

identifying a plurality of number variables based on the one or more word problem parameters;

determining a relationship between a first number variable and a second number variable of the number variables;

generating an assessment item using a processor including automatically generating a text phrase positioned between a first numerical value corresponding to the first number variable and a second numerical value corresponding to the second number variable based on the determined relationship; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

8.-9. (Cancelled)

10. (Currently Amended) A computer-implemented method of automatically generating a mathematical word problem assessment item, the method comprising:

receiving one or more inputs pertaining to the format of an assessment item, wherein the format of the assessment item comprises at least one event;

identifying a plurality of number variables for use in the assessment item, wherein each number variable is assigned to an event;

determining a relationship between a first number variable and a second number variable assigned to an event;

determining a format for the assessment item;

generating an assessment item using a processor including automatically generating a text phrase positioned between a first numerical value corresponding to the first number variable and second numerical value corresponding to the second number variable based on at least the format for the assessment item and the relationship between number variables assigned to the at least one event; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

11. (Canceled).

12. (Original) The method of claim 10 wherein determining a relationship for the variables assigned to each event comprises one or more of the following:

determining a variable for which to solve for each event;

determining an answer for each event;

determining a value for one or more variables; and  
determining a variable format.

13. (Original) The method of claim 10 wherein determining a format for the assessment item comprises:

determining a problem format having one or more sections; and  
determining content to place within each section.

14. (Previously Presented) The method of claim 10 wherein generating an assessment item comprises one or more of the following:

selecting identification types for one or more of the variables; and  
determining a numerical format for each of the one or more variables.

15. (Previously Presented) The method of claim 14 wherein selecting identification types comprises at least one of:

determining to identify a variable denoting a person generically,  
determining to identify a variable denoting an object by using a label,  
determining to identify a variable denoting an object by using a description of the object.

16-19. (Canceled)

20. (Currently Amended) A system for automatically generating a mathematical word problem assessment item, the system comprising:

a processor; and

a computer-readable storage medium operably connected to the processor, wherein the computer-readable storage medium contains one or more programming instructions for performing a method of automatically generating an assessment item, the method comprising:

receiving one or more word problem parameters from a user,

identifying a plurality of number variables based on the one or more word problem parameters,

determining a relationship between a first number variable and a second number variable,

generating an assessment item using a processor including automatically generating a text phrase positioned between a first numerical value corresponding to the first variable and a second numerical value corresponding to the second number variable based on the one or more variables and the determined relationship; and

storing the assessment item in a computer-readable memory;;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

21. (Currently Amended) A system for automatically generating a mathematical word problem assessment item, the system comprising:

a processor; and

a computer-readable storage medium operably connected to the processor, wherein the computer-readable storage medium contains one or more programming instructions for performing a method of automatically generating an assessment item, the method comprising:

receiving one or more inputs pertaining to the format of an assessment item,

wherein the format of the assessment item comprises at least one event,

selecting one or more variables for use in the assessment item, wherein each variable is assigned to an event,

determining a relationship between variables assigned to an event,

determining a format for the assessment item, and

generating an assessment item including automatically generating a text phrase positioned between a first numerical value corresponding to a first variable and second numerical value corresponding to a second variable based on at least the format for the assessment item and the relationship between variables assigned to the at least one event; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

22. (Currently Amended) A computer-implemented method of automatically generating a mathematical word problem assessment item, the method comprising:

receiving one or more input parameters;

generating a document structure based on the one or more input parameters and a relationship between a first number variable and a second number variable identified by the one or more input parameters;

producing a logical schema using the document structure;

generating an assessment item including automatically generating a text phrase positioned between a first numerical value corresponding to the first number variable and a second numerical value corresponding to the second number variable based on the logical schema using a data processor; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

23. (Original) The method of claim 22 wherein generating a document structure comprises:

building a mental model; and  
outlining the document structure based on the mental model.

24. (Original) The method of claim 23 wherein building a mental model comprises:

selecting one or more semantic frames;  
generating a list of one or more events; and  
binding one or more variables across the one or more events.

25. (Original) The method of claim 23 wherein outlining the document structure comprises:

generating one or more sentences for the mental model;  
determining a function for each sentence; and  
determining information to express in each sentence.

26-27. (Canceled)

28. (Previously Presented) The method of claim 22 wherein the document structure includes one or more of the following:

one or more variables;  
one or more values for at least one of the variables;

a mental model structure; and

an outline of a sequence of one or more sentences for the assessment item.

29. (Original) The method of claim 22 wherein producing a logical schema comprises:

outlining a sentence structure for one or more sentences; and

determining an information format for each sentence.

30. (Original) The method of claim 29 wherein determining an information format comprises one or more of the following:

determining a verb type for each sentence;

determining an ordering of one or more elements for each sentence; and

determining one or more vocabulary sets to use for each element.

31-32. (Canceled)

33. (Original) The method of claim 22 wherein generating an assessment item comprises:

parsing the logical schema;

annotating the parsed logical schema with grammatical information;

determining words and word forms based on the grammatical information; and

outputting text representing the assessment item.

34. (Canceled)

35. (Currently Amended) A computer-implemented method of automatically generating a mathematical word problem assessment item, the method comprising:

defining one or more semantic frames;

assigning one or more mental model structure variables;

defining one or more identity variables for a mental model structure;

determining a task-relevant problem structure;

defining a document format;

determining language variations including selecting a referent identification type for each of one or more participants based on a determined relationship between a first identity variable and a second identity variable using a data processor;

generating an assessment item including automatically generating a text phrase positioned between a first numerical value corresponding to the first identity variable and a second numerical value corresponding to the second identity variable based on the task-relevant problem structure, the document format and the language variations using a data processor; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

36. (Original) The method of claim 35 wherein assigning one or more mental model structure variables comprises defining one or more of the following:

one or more events;

one or more participant types; and

an event type for each event.



37. (Original) The method of claim 36 wherein determining a task-relevant problem structure comprises:

determining a variable for which to solve for each event;

determining an answer for each event; and

determining one or more values for each variable.

38-39. (Canceled)

40. (Currently Amended) A system for automatically generating a mathematical word problem assessment item, the system comprising:

a processor; and

a computer-readable storage medium operably connected to the processor, wherein the computer-readable storage medium contains one or more programming instructions for performing a method of automatically generating an assessment item, the method comprising:

receiving one or more input parameters,

generating a document structure based on the one or more input parameters

and a relationship between a first number variable and a second number variable determined based on the one or more input parameters,

producing a logical schema from the document structure,

generating an assessment item including automatically generating a text phrase positioned between a first numerical value corresponding to the first number variable and second numerical value corresponding to the second number variable from the logical schema; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

41. (Currently Amended) A system for automatically generating a mathematical word problem assessment item, the system comprising:

a processor; and

a computer-readable storage medium operably connected to the processor, wherein the computer-readable storage medium contains one or more programming instructions for performing a method of automatically generating an assessment item, the method comprising:

defining one or more semantic frames;

assigning one or more mental model structure variables,

defining one or more identity variables for a mental model structure,

determining a task-relevant problem structure,

defining a document format,

determining language variations including automatically generating a text phrase positioned between a first numerical value corresponding to a first identity variable and a second numerical value corresponding to a second identity variable and selecting a referent identification type for each of one or more participants based on a relationship between the first identity variable and the second identity variable using a data processor;

generating an assessment item based on the task-relevant problem structure, the document format and the language variations; and

storing the assessment item in a computer-readable memory;

wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship.

42. (Previously Presented) The method of claim 7, wherein the first numerical value is one of the identified variables;

wherein the second numerical value is one of the identified variables.

43. (Previously Presented) The method of claim 7, wherein the first numerical value or the second numerical value is a constant identified by the one or more word problem parameters.

44. (New) The method of claim 7, where generating the text phrase comprises automatically resolving a context-dependent selection.

45. (New) The method of claim 44, wherein said context dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

46. (New) The method of claim 10, where generating the text phrase comprises automatically resolving a context-dependent selection.

47. (New) The method of claim 46, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

48. (New) The system of claim 20, where generating the text phrase comprises automatically resolving a context-dependent selection.

49. (New) The system of claim 48, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

50. (New) The method of claim 21, where generating the text phrase comprises automatically resolving a context-dependent selection.

51. (New) The system of claim 50, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

52. (New) The method of claim 22, where generating the text phrase comprises automatically resolving a context-dependent selection.

53. (New) The method of claim 52, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

54. (New) The method of claim 35, where generating the text phrase comprises automatically resolving a context-dependent selection.

55. (New) The method of claim 54, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

56. (New) The system of claim 40, where generating the text phrase comprises automatically resolving a context-dependent selection.

57. (New) The system of claim 56, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.

58. (New) The system of claim 41, where generating the text phrase comprises automatically resolving a context-dependent selection.

59. (New) The system of claim 58, wherein said context-dependent selection includes at least one of a subject-verb agreement selection and an indefinite-definite article selection.